

REMARKS

By this amendment, claims 3, 4, 8, 13, 47, and 48 have been amended. Accordingly, claims 3, 4, 8, 13, 47, and 48 are currently pending in the application, of which claims 4, 47, and 48 are independent claims.

Applicants appreciate the indication that claims 3, 4, 8, and 13 contain allowable subject matter.

Applicants respectfully submit that the above amendments do not add new matter to the application and are fully supported by the specification. Support for the amendments may be found at least in FIGS. 4(A) & (B), 5(A) & (B), 6(A) & (B), 11(A) & (B), 12(A) & (B), and 13(A) & (B)).

In view of the above amendments and the following Remarks, Applicants respectfully request reconsideration and timely withdrawal of the pending objections and rejections for the reasons discussed below.

Claim Objection

In the Office Action, claims 3, 4, 18, 47 and 48 were objected to as containing informalities. Applicants respectfully believe that the Examiner meant to indicate that claims 3, 4, 8, 13, 47, and 48 contained informalities.

Claims 3, 4, 8, 13, 47, and 48 have been amended to correct such informalities. This amendment is made for the sole purpose of correcting such informalities. This amendment is not made for the purpose of avoiding prior art or narrowing the claimed invention, and no change in claim scope is intended. Therefore Applicants do not intend to relinquish any subject matter by these amendments. Applicants respectfully submit that claims 3, 4, 8, 13, 47, and 48, as amended, overcome the stated objection. Accordingly, Applicants respectfully request withdrawal of the objection for claims 3, 4, 8, 13, 47, and 48.

Therefore, claims 3, 4, 8, and 13 are now in condition for allowance.

Rejections Under 35 U.S.C. § 112, second paragraph

Claims 47 and 48 stand rejected under 35 U.S.C. § 112, second paragraph as being indefinite. Applicants respectfully traverse this rejection for at least the following reasons.

Applicants respectfully disagree that the limitations for “an average number of grain boundaries of polycrystalline silicon” render the claim indefinite. Each active channel region of each TFT includes a plurality of primary and secondary grain boundaries. Therefore, each active channel region of each TFT includes more than one grain boundary, where an average number of grain boundaries of polycrystalline silicon could be determined. Accordingly, Applicants respectfully believe that the claim limitation for “an average number of grain boundaries of polycrystalline silicon” is particular and distinct with regard to the subject matter of the present invention (See particularly FIGS. 4(A) & (B), 5(A) & (B), 6(A) & (B), 11(A) & (B), 12(A) & (B), and 13(A) & (B)); See specification at least at page 16, paragraph [0075] and [0076], pages 17 and 18, paragraph [0080], and page 22, paragraph [0102]).

Accordingly, Applicants respectfully request withdrawal of the 35 U.S.C. § 112, second paragraph rejection of claims 47 and 48.

Rejections Under 35 U.S.C. § 102

Claim 48 stands rejected under 35 U.S.C. § 102(b) as being allegedly anticipated by U.S. Patent No. 5,614,733 issued to Zhang, *et al.* (“Zhang”).

Claim 48 also stands rejected under 35 U.S.C. § 102(b) as being allegedly anticipated by U.S. Patent No. 5,705,829 issued to Miyanaga, *et al.* (“Miyanaga”). Applicants respectfully traverse this rejection for at least the following reasons.

In order for a rejection under 35 U.S.C. § 102(b) to be proper, a single reference must disclose every claimed feature. To be patentable, a claim need only recite a single novel feature that is not disclosed in the cited reference. Thus, the failure of a cited reference to disclose one or more claimed features renders the 35 U.S.C. § 102(b) rejection improper.

Claim 48, as amended, recites *inter alia*:

“A flat panel display device with polycrystalline silicon thin film transistors, comprising...wherein each thin film transistor at the driving circuit portion includes an average number of grain boundaries of polycrystalline silicon formed in an active channel region that meet a current direction line is more than zero and at least one less than an average number of grain boundaries of polycrystalline silicon formed in an active channel region of each thin film transistor installed at the pixel portion that meet a current direction line for a unit area of an active channel.”

With respect to Zhang, Applicants respectfully submit that Zhang fails to teach or suggest such features. The Examiner indicates that it would have been “inherent that the average number of grain boundaries in the driving TFT that meet a direction line is at least one less than the average number grain boundaries in the pixel TFT that meet a current line direction” (See Office Action, on pages 4 and 5).

In relying upon the theory of inherency, the Examiner must provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic necessarily flows from the teachings of the prior art. *Ex parte Tanksley*, 37 USPQ2d 1382, 1385 (Bd. Pat. App. & Int’f 1994).

“To establish inherency, the extrinsic evidence, ‘must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill in the art.’ *In re Robertson*, 169 F.3d 743, 745, 49 USPQ2d, 1949, 1950-51 (Fed. Cir. 1999) (citations omitted).

Applicants respectfully submit that the Examiner has failed to meet the burden of illustrating the claimed structural limitations are inherent. Further, the Examiner fails to provide

a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic necessarily flows from Zhang. The Examiner cites the teachings of Zhang for the crystallinity of portions of the silicon film 12a, which are located under the silicon nickel film 13, are better than the crystallinity of the silicon film 12b in the other regions because the nickel promoted crystallization (See col. 8, lines 54-62), incorrectly concluding that the crystallinity of the portions used to make the channels of the driving TFT is greater than the crystallinity of the portions used to make the channels of the pixel TFT (See Office Action, on page 4). The Examiner concludes that it would have been inherent that the average number of grain boundaries that meet the current direction in the driving TFTs is more than zero, but at least one less than that of the pixel TFTs. Applicants respectfully submit that one of ordinary skill in the art would not have recognized that the claimed limitations of the present invention would necessarily flow from the teachings of Zhang cited by the Examiner.

Applicants respectfully submit that it appears that the Examiner's conclusions are based on a hindsight consideration of Applicants' claimed limitations, not on a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic necessarily flows from Zhang. Accordingly, Zhang fails to teach each and every claimed feature of the present invention, as disclosed in amended claim 48.

Similar to the reasons noted above with respect to Zhang, Applicants respectfully submit that Miyanaaga fails to teach or suggest such features. Applicants further respectfully submit that the Examiner has failed to meet the burden of illustrating the claimed structural limitations are inherent. Further, the Examiner fails to provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic necessarily flows from Miyanaaga. The requirements for an inherency rejection are provided above. The Examiner cites the teachings of Miyanaaga for the direction of grain boundaries in the channel of

the driving TFT and the direction of grain boundaries in the channel of the pixel TFT (See Office action, on page 5; See Miyana, col. 2, lines 30-37). From these teachings in Miyana, the Examiner concludes that it would have been inherent that the average number of grain boundaries that meet the current direction in the driving TFTs is more than zero, but at least one less than that of the pixel TFTs. Applicants respectfully submit that the Examiner has not satisfied the burden required for establishing inherency. Further, Applicants respectfully submit that one of ordinary skill in the art would not have recognized that the claimed limitations of the present invention would necessarily flow from the teachings of Miyana cited by the Examiner.

Applicants respectfully submit that it appears that the Examiner's conclusions are based on a hindsight consideration of Applicants' claimed limitations, not on a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic necessarily flows from Miyana. Accordingly, Miyana fails to teach each and every claimed feature of the present invention, as disclosed in amended claim 48.

Accordingly, Applicants respectfully request withdrawal of the 35 U.S.C. § 102(b) rejection of claim 48. Since none of the other prior art of record discloses or suggests all the features of the claimed invention, Applicants respectfully submit that independent claim 48, and all the claims that depend therefrom, are allowable.

Rejections Under 35 U.S.C. § 103

Claim 47 stands rejected under 35 U.S.C. § 103(a) as being allegedly unpatentable over U. S. Patent Publication No. 2004/0079944 issued to Hiroshima, *et al.* ("Hiroshima") in view of Zhang. Applicants respectfully traverse this rejection for at least the following reasons.

Claim 47 also stands rejected under 35 U.S.C. § 103(a) as being allegedly unpatentable over Hiroshima in view of Miyana. Applicants respectfully traverse this rejection for at least the following reasons.

To establish a prima facie case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Third, the reference or references, when combined, must disclose or suggest all of the claim limitations. The motivation to modify the prior art and the reasonable expectation of success must both be found in the prior art and not based upon a patent applicant's disclosure. See *in re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

The examiner has failed to establish a prima facie case of obviousness. Assuming *arguendo* that the references may be combined and a reasonable expectation of success exists, the combined references do not disclose or suggest all of the claim limitations.

Claim 47, as amended, recites *inter alia*:

"A flat panel display device with polycrystalline silicon thin film transistors, comprising...wherein an average number of grain boundaries of polycrystalline silicon which are formed in an active channel region of the driving thin film transistor and meet a current direction line is more than zero and at least one or more less than an average number of grain boundaries of polycrystalline silicon which are formed in an active channel region of the switching thin film transistor and meet a current direction line for a unit area of an active channel."

Applicants respectfully submit that Hiroshima fails to teach or suggest such features. As noted by the Examiner, Hiroshima fails to teach or suggest the specific limitations regarding the average number of grain boundaries in the channel regions of the switching and driving TFTs (See Office Action, on pages 6-8). As noted above with respect to claim 48, Zhang fails to teach or suggest such claimed features. Accordingly, Zhang fails to cure the deficiencies of Hiroshima. Accordingly, Hiroshima in view of Zhang fails to teach or suggest each and every claimed feature of the present invention, as disclosed in amended claim 47.

With respect to Miyanaga, Applicants further submit, as stated above, Miyanaga fails to teach or suggest such claimed features. Accordingly, Miyanaga fails to cure the deficiencies of

Hiroshima. Accordingly, Hiroshima in view of Miyanaga fails to teach or suggest each and every claimed feature of the present invention, as disclosed in amended claim 47.

Accordingly, Applicants respectfully request withdrawal of the 35 U.S.C. § 103(a) rejection of claim 47. Since none of the other prior art of record, whether taken alone or in any combination, discloses or suggests all the features of the claimed invention, Applicants respectfully submit that independent claim 47, and all the claims that depend therefrom, are allowable.

Allowable Subject Matter

Applicants appreciate the indication that claims 3, 4, 8, and 13 contain allowable subject matter. Claims 3, 4, 8, and 13 have been amended to address the aforementioned claim objections.

Accordingly, Applicants submit that claims 3, 4, 8, and 13 are in condition for allowance.

CONCLUSION

Applicants believe that a full and complete response has been made to the pending Office Action and respectfully submits that all of the stated objections and grounds for rejection have been overcome or rendered moot. Accordingly, Applicants respectfully submit that all pending claims are allowable and that the application is in condition for allowance.

Should the Examiner feel that there are any issues outstanding after consideration of this response, the Examiner is invited to contact the Applicants' undersigned representative at the number below to expedite prosecution.

Prompt and favorable consideration of this Reply is respectfully requested.

Respectfully submitted,

/hae-chan park/

Hae-Chan Park
Reg. No. 50,114

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CUSTOMER NUMBER: 58027

H.C. Park & Associates, PLC
8500 Leesburg Pike
Suite 7500
Vienna, VA 22182
Tel: 703-288-5105
Fax: 703-288-5139
HCP/BYC/kbs